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RP-003-001527 Seat No. _____

Third Year B. Sc. (Sem. V) (CBCS) Examination

February - 2019

Microbiology : Paper - 503

(Prokaryotic Metabolism)

(Old Course)

Faculty Code : 003

Subject Code : 001527

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All Questions are compulsory.

(2) Right side figures indicate mark of the question.

(3) Draw the figure wherever necessary.

(4) Write answers of all the questions in main answer sheet.

1 Answer Briefly : **20**

(1) Define Metabolism.

(2) Define Bioenergetics.

(3) Give full form of NAD & NADP.

(4) Why ATP is called an energy rich molecule?

(5) Which organisms prefer E.D. Pathway?

(6) Name regulatory enzymes of Glycolysis.

(7) Enlist two enzymes of pentose phosphate pathway.

(8) Which are different modes of amino acid catabolism under aerobic condition?

(9) Define biochemical mutant.

(10) Define Photoreaction Centre.

(11) What do you mean by Chlorosomes?

(12) Give two examples of accessory pigments.

(13) Define Chemoautotrophs.

(14) Give two examples of Nitrifying bacteria.

(15) What do you mean by Archaebacteria?

(16) What do you mean by Methylotrophs?

(17) What do you mean by simple Diffusion?

(18) What is the function of ATPase enzyme?

(19) Give full form of PEP-PTS.

(20) What is the function of Siderophore?

2 (A) Answer in short : (**Three** out of six) **6**

(1) Define oxidation, reduction reactions with examples.

(2) Give importance of HMP shunt.

(3) Define anaerobic respiration.

(4) What are Quinones?

(5) What do you mean by passive transport?

(6) Define methanogens and give two examples.

(B) Answer specifically : (**Three** out of six) **9**

(1) Explain the role of precursor metabolites in metabolism.

(2) Explain substrate level phosphorylation.

(3) Explain Glyoxylate cycle & its significance.

(4) Discuss non cyclic photophosphorylation.

(5) Explain Iron bacteria.

(6) What do you mean by facilitated diffusion?

(C) Write short notes on : (**Two** out of Five) **10**

(1) Derive Michaelis-Menten equation for the enzymatic reaction.

(2) Discuss Beta oxidation of fatty acids.

(3) Describe Components of bacterial ETC.

(4) Discuss in detail fermentative patterns of gram negative bacteria.

(5) Discuss in detail fluid mosaic model of cell membrane.

3 (A) Answer in short : (**Three** out of six) **6**

(1) Give concept of Gibbs free energy.

(2) How many ATPs are produced from glucose under aerobic condition? Calculate it.

(3) Explain the role of reducing power in metabolism.

(4) Enlist membrane lipids with examples.

(5) Explain decarboxylation with one example.

(6) What are Hydrogen bacteria?

(B) Answer specifically : (**Three** out of six) **9**

(1) Explain ED pathway.

(2) Explain role of ATP in metabolism.

(3) Explain Stickland reaction.

(4) Discuss oxidative phosphorylation.

(5) Discuss Photophosphorylation in Halobacterium.

(6) Explain Quorum sensing.

(C) Write short notes on : (**Two** out of Five) **10**

(1) Explain importance of conformational changes in regulatory enzymes.

(2) Explain all reactions of Citric Acid cycle.

(3) Discuss in detail Peptidoglycan Biosynthesis.

(4) Discuss pattern of Carbohydrate fermentation in lactic acid bacteria.

(5) Explain signal transduction.